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*Rec'd EO
6/7/57
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23 May 1957

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Subject: Contract [REDACTED]

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Dear [REDACTED]

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This is the fifth in a series of informal letter reports concerning the progress under Contract [REDACTED] for the period 21 March to 21 May 1957.

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The first progress report has been completed and is awaiting distribution. This report is quite complete in its record of work taking place up to 1 April 1957.

In accordance with the current project study areas, it is felt that significant advancement has taken place within the past two months. The following paragraphs will summarize this work.

A film stress transducer has been investigated in the laboratory and has been found to follow theoretical predictions quite accurately. This may be noted on the enclosed curve where the solid line is the theoretical relationship and the plotted points represent the experimental data. Two photographs of this system will be forwarded to you within the next week. It is felt that this system of uniaxial stress determination in biaxially stressed membranes will prove to be a powerful experimental tool for use in many pressurized systems of this form.

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The general equation which is used to generate the nine body configurations has been mathematically integrated in its general form. The general solutions are in the form of Gamma functions which are readily evaluated with tabulated tables. The general solutions of the inertial characteristics as well as volume, area, etc., of these bodies have now been determined and are being used by other projects having specific LTA objectives.

Our experimental program dealing with the use of the electrolytic trough as a perfect fluid analogue is just beginning. We have found classified reports of work done touching this area of interest using this same technique. Their reports indicated that the electrolytic trough data compared quite well with data from wind tunnels for solid bodies of revolution.

The experimental system to study the mechanics of pressurized systems is virtually completed. A photograph of this system will also be forwarded to you.

Very truly yours,

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Geophysics Section

RLS:mmm

